



TIMELINEZ

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THE JOINT NEWSLETTER OF THE THREE TIMEX-SINCLAIR
USER GROUPS IN THE SAN FRANCISCO BAY AREA
** EBZUG PUG SVSTUG **

SOFTWARE REVIEW:

NEW HARD/SOFTWARE COMBOS PRODUCE DYNAMITE COLOR-B/W GRAPHICS

By Norm Lehfeldt

High-resolution black-and-white or color screen dumps for both the Timex/Sinclair 2068/Spectrum and the Sinclair QL are implemented with two new software packages.

For the QL, Don Thompson of Martinez, CA has produced a monochrome dump utility for the Olivetti PR 2300, ink-jet printer and a full-color dump for the color ink-jet printer built by Canon and marketed also with Radio Shack and IBM name plates.

The monochrome utility reproduces the colors from the QL screen as a series of different stipples so that there is pleasing contrast between adjacent areas of different colors. The color dump reproduces the colors on the QL screen with remarkable accuracy, given the differences between color phosphors and color inks.

Both of Don's programs reproduce the screen either as a one-page, full-size horizontal dump or in 'zoom' mode which magnifies any selected portion of the screen by two diameters. Using this feature it is possible to copy the whole screen on two strips of paper which can then be taped together for a poster-sized print-out! Both programs offer positive or negative image print-outs. In the color program only black and white are swapped in the negative mode. This feature is especially useful in printing 'Easel' graphs, since you don't waste a lot of ink reproducing the black of the monitor screen. Both utilities also feature well-thought-out SuperBASIC loader programs which let you select the various options from attractively designed menu screens.

Don's programs are marketed by Curry Computer.

For the 2068, Dave Franson has created and is marketing a set of color screen dumps that reproduce that computer's color displays on the same Canon-Radio Shack-IBM color ink-jet printer.

The fully-relocatable machine-code routines (and their BASIC

loading-relocating programs) are provided on opposite sides of a single cassette and produce either a 2 1/4" X 3" or a 4.5" X 6" color screen dump. It should be possible to load both drivers at once and switch back and forth between image sizes by appropriate USR calls. (I believe it is also possible to load them along with Jack Dohaney's relocatable AERCO I/F driver and thus have your program switch easily between text and graphics printing.)

Supplying the two drivers separately greatly enhances the flexibility you will have in incorporating them into your own programs. Only the AERCO printer interface is supported by the drivers.

Where to buy them:

Don Thompson's screen dump programs for the QL and the Olivetti PR 2300 monochrome or Canon-Radio Shack-IBM color printers are available from:

Curry Computer
P.O. Box 5607
Glendale, AZ 85312-5607
(602) 978-2902

Dave Franson's color dumps for the 2068/Spectrum are \$10.00 from:

Dave Franson
3534 E. Squire Ave., A
Cudahy, WI 53110

In the Bay Area the Radio Shack CGP220 color printer has been closed out, but there may be supplies in other areas. At last word, the identical Canon PJ-1080A was being offered for \$199.00 plus \$12.00 S/H by:

BCE Liquidators
3233 K Street, NW
Washington, DC 20007
(800) 545 7447

Z X - P C

By John Ezike

THIS MONTH I HAVE A SHORT PROJECT WHICH WILL ENABLE YOU TO ADD A SWITCH TO YOUR TS2040 PRINTER FOR UNDER \$3.00! BEFORE YOU BEGIN PLEASE READ THE DISCLAIMER.

DISCLAIMER

NEITHER THE PUBLISHER OF THIS MAGAZINE NOR THE AUTHOR IS RESPONSIBLE FOR ANY DAMAGE THAT MIGHT OCCUR IF YOU ATTEMPT THIS PROJECT. YOU DO SO AT YOUR OWN RISK. IF YOU DECIDE TO PROCEED WITH THIS PROJECT, MAKE SURE THE WARRANTY ON YOUR PRINTER HAS EXPIRED.

DISCUSSION

THE REASON FOR ADDING A SWITCH IS THAT EVEN AFTER YOU PRESS THE 'OFF' BUTTON TO TURN THE PRINTER OFF, POWER IS STILL BEING SUPPLIED TO THE PRINTER! THE ON/OFF SWITCHES ONLY CONTROL THE PRINT DRIVER, LEAVING YOUR PRINTER ON FOR VERY LONG PERIODS OF TIME COULD CAUSE IT TO OVERHEAT AND BE DAMAGED. YOU COULD UNPLUG THE POWER WHEN YOU ARE NOT USING THE PRINTER, HOWEVER FREQUENT PLUGGING AND UNPLUGGING CAN WEAR OUT THE PLUG AND JACK. THE IDEA IS QUITE STRAIGHTFORWARD AND SIMPLY INVOLVES CUTTING THE TRACE THROUGH WHICH POWER IS SUPPLIED TO THE PRINTER AND JUMPING THE CUT TRACE WITH A SWITCH. A LED (LIGHT EMITTING DIODE) IS USED TO INDICATE THAT POWER IS ON. IN MY ARTICLES ON HARDWARE PROJECTS I WILL USE RADIO SHACK PART NUMBERS, SINCE IT WILL MAKE THEM EASIER TO LOCATE.

PARTS LIST

- 1 - SPDT MICROMINI SWITCH (#275-625)
- 1 - LIGHT EMITTING DIODE (#276-041)
- 1 - 470 OHM 1/4W 5% (#271-1317)
- 22 GAUGE HOOK-UP WIRE

TOOLS NEEDED

- 30 WATT, GROUNDED SOLDERING IRON
- 40/60 ROSIN CORE SOLDER
- MINI LONG NOSED PLIERS
- DESOLDERING BRAID OR TOOL
- XACTO OR UTILITY KNIFE
- WIRE STRIPPER

PREPARATION

YOU CAN GET YOUR PARTS FROM ANY ELECTRONICS PARTS STORE YOU CHOOSE, JUST MAKE SURE THAT THE SPECIFICATIONS ARE THE SAME. CUT TWO 8 INCH LENGTHS OF THE HOOK-UP WIRE AND REMOVE 1/4 INCH OF INSULATION FROM ALL FOUR ENDS. CLEAR YOUR WORK AREA, MAKING ESPECIALLY SURE THAT YOU HAVE NO SMALL PARTICLES LYING AROUND THAT COULD ENTER YOUR PRINTER MECHANISM AND DAMAGE IT. PLUG IN THE PRINTER. REMOVE THE PAPER FROM YOUR PRINTER BY HOLDING THE ROLL UP AND CUTTING ACROSS IT WITH A PAIR OF SCISSORS. PRESS AND HOLD THE 'ON' SWITCH UNTIL THE PAPER LEFT IN THE PRINTER COMES OUT. UNPLUG THE PRINTER AND TURN IT OVER. YOU WILL SEE FOUR SCREWS. REMOVE THEM AND PLACE THEM ASIDE SAFELY. MAKE

SURE THAT YOU HOLD THE TWO HALVES OF THE CASE TOGETHER. TURN THE PRINTER THE RIGHT SIDE UP. CAREFULLY LIFT OFF THE TOP HALF OF THE CASE AND PLACE IT TO ONE SIDE. YOU ARE NOW LOOKING AT THE COMPONENT SIDE OF THE PRINTED CIRCUIT BOARD (PCB). SEE FIG. 1. IN THE TOP RIGHT HAND CORNER YOU WILL SEE A HEAT SINK AND RIGHT IN FRONT OF YOU WILL BE THE PRINTER MECHANISM. TWO AMBER COLORED FLEXIBLE RIBBON CONNECTORS ARE PLUGGED INTO TWO SOCKETS LABELED J1 AND J2. CAREFULLY REMOVE EACH CONNECTOR BY HOLDING THE SIDES AND PULLING UPWARDS. YOU MAY HAVE TO MOVE IT FROM SIDE TO SIDE SLIGHTLY, WHILE PULLING. NOW THAT THE CONNECTORS ARE FREE, REMOVE THE PRINTER MECHANISM. THERE ARE TWO METAL PLATES ON EITHER SIDE BENT OUT TO FORM FOUR FLANGES, WITH RUBBER GROMMETS IN THE CENTER OF EACH FLANGE. THESE GROMMETS FIT AROUND FOUR PLASTIC POSTS, (LABELED E, F, G AND H) WHICH ARE ATTACHED TO THE LOWER HALF OF THE CASE. HOLD THE PCB DOWN WITH ONE HAND AND GENTLY LIFT OFF THE SIDE OF THE MECHANISM WHICH FITS AROUND POSTS G, AND H. HOLD ONLY THE FLANGES WHILE LIFTING. DO THE SAME FOR THE OTHER SIDE. DO NOT TOUCH THE ROLLER OR ANY OTHER PART OF THE PRINTER SINCE IT IS DELICATE AND COULD BE DAMAGED. PLACE THE MECHANISM IN THE TOP COVER ALONG WITH THE SCREWS AND PRINTER PAPER.

CONSTRUCTION

REMOVE THE PCB FROM THE CASE BY SLIDING A SMALL SCREWDRIVER BETWEEN THE PCB AND CASE AND LIFTING. ON THE REAR EDGE OF THE PCB AND IN THE CENTER IS THE POWER JACK. ABOUT A 1/4 INCH BELOW IT ARE TWO GROUPS OF THREE FEEDTHROUGH HOLES IN THE SHAPE OF A TRIANGLE. LOCATE THE FEEDTHROUGH HOLE IN THE GROUP ON THE RIGHT LABELED 'C'. ONE INCH BELOW THIS HOLE IS ANOTHER FEEDTHROUGH HOLE LABELED 'D'. SEE FIG. 1. THE DOTTED LINE JOINING POINTS C AND D REFERS TO THE TRACE CONNECTING THEM ON THE OTHER SIDE OF THE PCB. THE JAGGED LINES CROSSING THE TRACE DENOTES THAT THE TRACE SHOULD BE CUT. IN THE LOWER LEFT HAND CORNER OF THE PCB IS A FEEDTHROUGH HOLE LABELED 'B'. TURN THE PCB OVER AND WITH THE XACTO OR UTILITY KNIFE GENTLY SCRAPE OFF THE PROTECTIVE COATING TO EXPOSE A 1/4 INCH AREA OF COPPER AROUND 'B'. THIS WILL BE THE 'GROUND' TO WHICH YOU WILL SOLDER ONE END OF THE LED.

LOOK AT THE LED. YOU SHOULD SEE A FLAT SIDE AROUND ITS AIM AND THE SHORTER OF ITS TWO LEADS SHOULD BE NEXT TO IT. THIS IS THE CATHODE OR NEGATIVE LEAD. ON SOME LED'S YOU WILL SEE A NOTCH INSTEAD OF A FLAT SIDE ABOVE THE CATHODE. FROM THE COMPONENT SIDE, PUSH THE CATHODE THROUGH HOLE 'B' AND SOLDER IT TO THE EXPOSED COPPER AREA. MAKE SURE THE SOLDER CONNECTION IS SHINY AND SMOOTH. IF IT ISN'T REMOVE IT WITH THE SOLDER BRAID AND RESOLDER. DO NOT APPLY TOO MUCH HEAT WHILE SOLDERING AS THIS COULD DAMAGE YOUR COMPONENTS. NOW SOLDER THE OTHER LEAD (ANODE) TO ONE END (IT DOESN'T MATTER WHICH) OF THE RESISTOR AND SOLDER THE OTHER END OF THE RESISTOR TO POINT 'A'. THIS IS THE POSITIVE OR PLUS SIDE FOR THE LED. THE RESISTOR ACTS AS A CURRENT LIMITER AND PROTECTS YOUR LED FROM EXCESSIVE CURRENT. POINT 'A' IS THE LEAD

ON THE DISC CAPACITOR C11, WHICH IS CONNECTED TO THE POSITIVE LEAD ON THE ELECTROLYTIC CAPACITOR, C10. TURN THE PCB OVER TO VERIFY THIS. IF C11 IS PLACED TOO CLOSE TO THE SURFACE OF THE PCB, TURN THE PCB OVER AND SOLDER THE RESISTOR TO THE SOLDER PAD CORRESPONDING TO POINT 'A'. WE ARE NOW GOING TO CONNECT THE SWITCH. FROM THE COMPONENT SIDE, PUSH THE STRIPPED END OF ONE OF THE HOOK-UP WIRES THROUGH HOLE 'C' AND SOLDER IT. NOW, PUSH ONE END OF THE OTHER WIRE THROUGH HOLE 'D' AND SOLDER IT. TURN THE PCB OVER TO THE SOLDER SIDE AND WITH THE UTILITY KNIFE CUT THE TRACE JOINING POINTS 'C' AND 'D'. MAKE SURE THE TRACE IS COMPLETELY CUT. A CUT ABOUT 1/16 INCH WIDE SHOULD BE ENOUGH.

NOW REFER TO FIG. 2. RETRIEVE THE TOP HALF OF THE CASE AND WITH A DRILL OR SOME OTHER SUITABLE DEVICE, DRILL A 1/4 INCH HOLE TO MOUNT THE SWITCH. PLACE THE TWO CASE HALVES TOGETHER AND DRILL ANOTHER HOLE JUST LARGE ENOUGH TO FIT THE LED. DON'T DO YOUR DRILLING AROUND YOUR PRINTER MECHANISM! MOUNT THE SWITCH IN THE HOLE YOU JUST MADE. IT WILL BE A LITTLE CRAMPED, SO TAKE YOUR TIME. NOW, SOLDER THE FREE END OF THE WIRE CONNECTED TO 'C' TO THE CENTER TERMINAL OF THE SWITCH. SOLDER THE FREE END OF THE WIRE CONNECTED TO 'D' TO EITHER OF THE TWO OUTSIDE TERMINALS ON THE SWITCH. REPLACE THE PCB IN THE LOWER HALF OF THE PRINTER CASE, MAKING SURE TO ALIGN THE NOTCHES ON THE SIDES OF THE PCB WITH THE TABS IN THE CASE. REPLACE THE PRINTER MECHANISM. THE RUBBER GROMMETS IN THE FLANGES SHOULD BE FLUSH WITH THE TOP OF THE SCREW POSTS. PLUG IN THE TWO RIBBON CONNECTORS. PUSH DOWN FIRMLY TO MAKE SURE THEY ARE SNUG. BEND THE LED FORWARD SO THAT IT RESTS ON THE GROOVE IN THE LOWER PART OF THE CASE AND PROTRUDES ABOUT 1/8 INCH OUTSIDE THE CASE. KEEP THE LEADS APART. REPLACE THE TOP COVER. THE LED SHOULD FIT IN THE GROOVE ALREADY MADE. HOLD BOTH HALVES TOGETHER AND REPLACE THE FOUR SCREWS.

TESTING

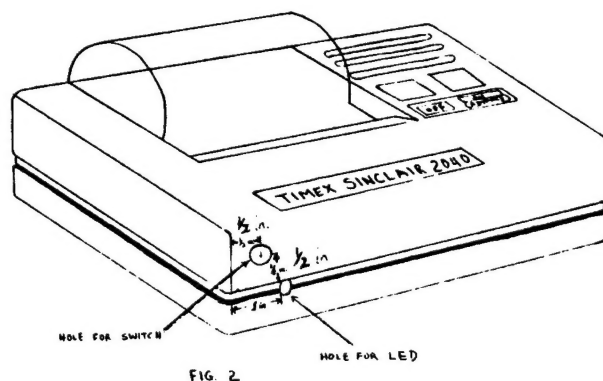
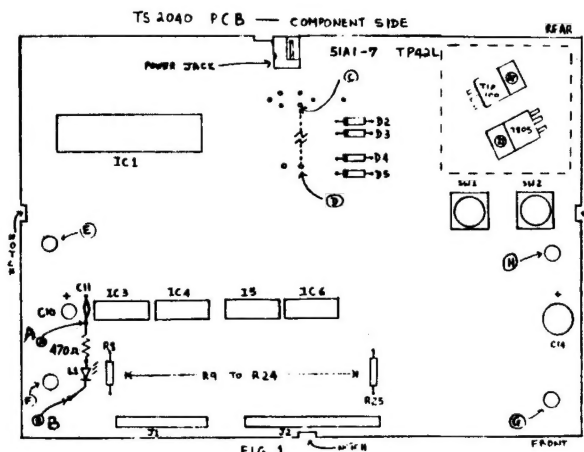
PLUG IN THE POWER. IF THE LED IS LIT, YOU KNOW THAT THE SWITCH IS IN THE 'ON' POSITION. IF IT ISN'T, TRY THE OTHER POSITION. IF THE LED DOES NOT LIGHT, QUICKLY UNPLUG THE POWER, OPEN UP THE PRINTER AND CHECK YOUR CONNECTIONS ESPECIALLY THE INSTALLATION OF THE LED. ALSO LOOK FOR SOLDER BRIDGES AND BAD SOLDER JOINTS. INSERT THE PRINTER PAPER AND REFORM THE SELF-TEST PROCEDURE AS DESCRIBED IN YOUR PRINTER MANUAL.

CONCLUSION

IF ALL GOES WELL, CONGRATULATIONS!!! WE'LL TURN THIS LITTLE COMPUTER INTO A 'REAL' COMPUTER YET. THIS PROJECT SHOULD ALSO WORK FOR THE ALPHACOM PRINTER. TO USE YOUR PRINTER, PLUG IT IN, SWITCH IT ON, AND PRESS THE 'ON' SWITCH. IF YOU HAVE ANY QUESTIONS, SEND ME A LONG S.A.S.E AND I WILL TRY TO ANSWER IT. SEE YOU NEXT MONTH.

JOHN O. EZIKE
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BERKELEY, CA 94703

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NOTICE

The November 1986 issue of TIMELINEZ included an article entitled "BASIC" by Terry Greenlee. Two of the BASIC program lines should be revised as follows:

```
30 LET C$="■"
40 LET L$="■"
```

In other words, a black square (an INVERSE VIDEO space) should be included within the quotation marks.

```
10 REM **** TRY THIS ****
20 OVER 0
30 FOR N=65 TO 90
40 PRINT AT 10,15;CHR$ N;
50 PRINT CHR$ 8;
60 REM CHR$ 8 = BACKSPACE
60 PAUSE 25; NEXT N; CLS
```

FROM SEPT. 15-28 TWICE N/L.

Amstrad To Bow New IBM Compatibles From \$595

iming to set the \$34 billion world personal computer market on its ear, Amstrad, the maverick British consumer electronics marketer, has announced plans for the introduction and international sale of an eight-model line of low priced IBM-compatibles.

The new models range from a leader designed to list in England at about \$595 to a high-end business oriented version with color monitor and hard disc drive at under \$1,500. Alan Sugar, Amstrad's chairman, says the machines are already being turned out in the Far East on a production schedule that calls for a rate of 70,000 monthly, and that he is looking for sales in Europe of 300,000 total units by the end of this year.

A sales start in the U.S. is scheduled for early next year, and Sugar says he should be able to move 50,000 to 60,000 a month here. Production in 1987, he claims, will then jump to 100,000 monthly, and worldwide sales for the year should hit at least 800,000. If Amstrad

even comes close to its volume goals, it could put a severe competitive crimp in the marketing plans of the U.S. low end computer leaders Atari and Commodore, while siphoning off a major chunk of business from a host of smaller computer companies marketing low-end IBM clones.

Relatively unknown here, Amstrad has through sharp pricing and marketing tactics established itself as a major video and audio equipment company in the U.K., and one of the biggest players in the Europe-wide computer market, with a 34 percent share. Last spring it acquired Sinclair's computer business, along with consumer electronics brand rights, for \$7.5 million. Just now finding its way into stores here is Amstrad's Korean-made packaged \$799 personal word processing system that includes a computer, disc drive, software, monitor and printer. It's being distributed under an exclusive agreement by Sears World Trade Corp. Whether Sears will also handle Amstrad's new IBM compatible PCs is uncertain. □

BETTER RGB CIRCUIT by Joe Williamson

FROM THE JULY 1986 SUM N/L.

The circuit described in the february 1986 issue of SUM was designed around the Sears RGB/TV/Monitor (same as the Sanyo model # 31C426) and the Magnavox (NAP) RGB-40 or 80.

Both of these monitors (and the QL monitor as well) take negative-going composite sync and active high RGB signals and have well buffered inputs to clean up any poor inputs.

Many RGB monitors out on the market don't have these features and therefore do not work very well or at all with the circuit described. With the simple addition of a 74LS86 Quad 2-input Exclusive OR gate, you can shape (buffer) and invert all four signals to what ever format you need by changing the polarity of one of the two input lines on each of the four gates.

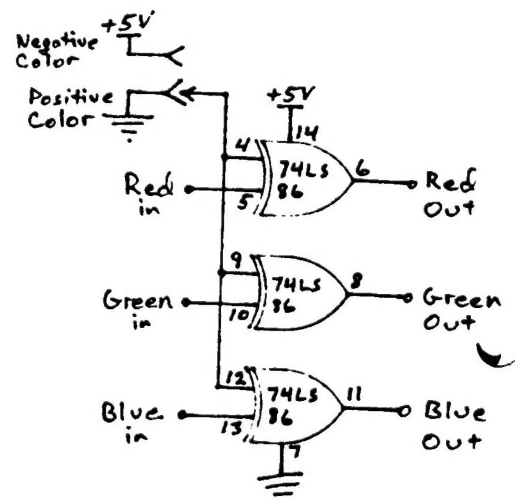
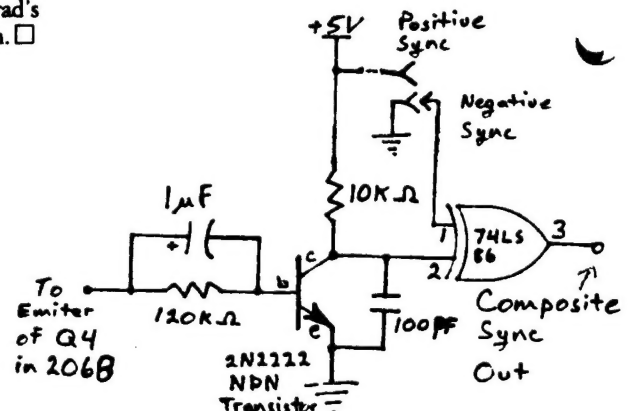
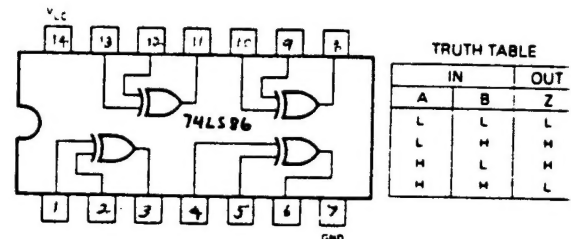
Also, I neglected to say what transistor was used in the original circuit; it is a 2N2222, Radio Shack #276-2009. Although, any garden variety NPN transistor should work.

LETTERS Electronics/August 7, 1986

Sinclair is still kicking

To the editor: Your issue of June 23 contains a serious error. It is not true that Amstrad Consumer Electronics plc bought Sinclair Research Ltd. [*Electronics*, June 23, 1986 p. 53]. They simply bought the existing computer range and the right to the use of the brand name. They have no right to any future computer products or any other product categories. A portable computer is under development, but by my team and for my company. We plan to launch it in the first half of 1987.

Sir Clive Sinclair
Chairman
Sinclair Research Ltd.
London



EDITORS NOTE: Last month, an article by Dave Gray was published which dealt with the transmittal of BASIC programs over a MODEM. The article below, sent to me via MODEM, deals with the transmittal of text files.

MTERM STUFF

by Bill Strick

Now that there is a sizeable group of MODEM owners, perhaps a little advice concerning the use of these marvels will promote a sharpening of interest in their use and an increase in the exchange of useful information between all of us. Following are some hints regarding data transmission via MODEM.

A. TO TRANSMIT (XMIT)

SENDER goes to BUFFER MENU and erases Buffer contents. Back to MAIN MENU, EXITS to BASIC and LOADS or MERGES data to be transmitted. (See Section C for details.)

Phone the person to receive the above data and determine (via voice) that the parameter settings agree as shown below:

SENDER	RECEIVER	BOTH
BUF: CLOSED	BUF: CLOSED (Opened by	XMIT: OFF
DUP: HALF	DUP: FULL XMIT OP)	WORD: 7
LF: ON	LF: OFF	STOP: 1
CR: OFF	CR: OFF	PRTY: EVEN
CON: NONE (text)	CON: NONE (text)	DSPW: 32
: (HEX for other)	: (HEX for other)	

SENDER informs RECEIVER to (1) clear buffer, (2) go to terminal mode, and (3) connect up via MODEM COMMAND M.

To access MODEM COMMANDS, press CAPS SHIFT & ENTER together. ENTER M to connect. SENDER also CONNECTS as described. Both users leave phone receiver off hook. CONNECT will take place with a displayed signal and sound.

From this point, ANY activity is in the hands of SENDER ONLY!!

After CONNECT signal, SENDER opens the RECEIVER's buffer by executing a CONTROL R (CAPS SHIFT & 7 and then enters an R).

SENDER now returns to MAIN/MENU using CAPS SHIFT 8 and calls up BUFFER MENU. ENTERS T to transmit text in buffer.

ENTER four times: #1 after prompt- "Prompt String"
#2 after prompt- "Character delay"
#3 returns SENDER to MAIN MENU
#4 enters TERMINAL MODE

This begins transmisson which can be viewed on screen.

After end of transmission, SENDER closes RECEIVER's buffer with a CONTROL T (CAPS SHIFT & 7, then T).

SENDER then enters BELL signal (CONTROL G...CAPS SHIFT & 7, then G), which signals the end of transmission (XMIT) to RECEIVER.

After BELL, both USERS disconnect by doing a MODEM COMMAND H (CAPS SHIFT & ENTER, then H) to "Hang up" modems. They can now converse freely on their telephones.

NOTE: If "Waiting Caller" service is on SENDER's phone, it will be necessary (before using MODEM) to cancel this service temporarily. This can be done by dialling STAR (*) 70 for a touchtone phone or 1170 for a pulsetone phone.

B. TO MOVE MTERM BUFFER CONTENTS TO NSCRIPT

To save material from Modem buffer, first note the length of Buffer used (BUFUSD). Then EXIT to BASIC and SAVE.

To Tape: SAVE "(name)" CODE 26710, (length)
To AERCO DDS: MOVE "(drive):(name).bin", 26710, (length)
To ZEBRA DDS: SAVE "(name)" CODE 26710, (length)

LOAD NSCRIPT. LOAD saved material from Home Menu.

C. TO TRANSMIT NSCRIPT FILES OR BIN.COD VIA MTERM

First, move file to MTERM buffer as outlined below:

- # Make a note of document (file) length (from a DIRECTORY or CATALOG listing or from a Header Reading).
- # SAVE document to tape or disk.
- # LOAD MTERM. Go to Buffer Menu.
- # Clear buffer. EXIT to BASIC.
- # Open up program area with BIN A\$ (document length).

Since this expands VARS (not the program area):

POKE 23627, PEEK 23641: POKE 23628, PEEK 23642

Now LOAD from Tape: LOAD "" CODE 26710
from AERCO DDS: CAT "(drive):(name).bin", 26710
from ZEBRA DDS: LOAD "(name)" CODE 26710

The command, PRINT USR 54016, will restore MTERM with document fully installed in its Buffer and ready for transmission.

NOTE: Some BBS systems require LF after each line, so you may have to add them before leaving NSCRIPT.

We are two people who still get a great deal of satisfaction out of our humble computers. We've spent many, many hours telecommunicating all over the U.S. to every BBS that we could find which supports our machines. We did not want all this effort and time to be wasted on our own uses alone. So we got together and wrote a small publication called, "The T/S Guide to telecommunication".

This is an entirely FREE publication, no copyrights will apply. We enclose an outline of the document in progress. We intend to send you a copy when it is ready. In the mean time, we wanted you to have the information on the enclosed chart which gives the names, numbers, hours and settings of all the boards that we could find. We would hope that you could see fit to publish this in your User Group Newsletter. Failing that we would hope you might make it available to all your members by xeroxing at the User Group meeting. As I said, we spent many, hours on the phone verifying all this information, and are prepared to say that it's accurate (until it changes). The guide has a much more detailed description of each of these boards, as well as descriptions of all the modems, terminal programs and hardware add-ons that we could find. It should certainly be in your hands by the end of October.

Take it easy, and keep on TIMEXing!

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Access to PC Forum

Access to Shared Computers

200 BPS

1000 BPS

2400 BPS

No. of Message Bases

E-Mail

2000 Downloads

1000 Downloads

Total System Capacity

Real Time Downloads

Real CPM Downloads

Pete Fische

P.O.Box 2000

Tempe, AZ 8

AVERAGE REMOTE	(213)325-0213	8,1,N	24Hrs		Y	N	Y	Y	N	1	Y	Y	Y	21 MB	1 MB	1 MB	Los Angeles, California
BILL'S OBSESSION	(404)377-2550	8,1,N	90%		Y	Y	Y	Y		2	Y	Y	N	22 MB	300 KB	2 MB	Atlanta, Georgia
COMPUSERVE	(Local No.)	7,1,0	24Hrs			N	Y	Y	Y	2	Y	Y	Y			Y	Columbus, Ohio
FWKUG	(817)540-4183	8,1,N	24Hrs		Y	Y	Y	Y	Y	0	Y	Y	N	44 MB	200 KB	25-30 MB	Ft.Worth, Texas
ISTUG	(317)898-3903	7,1,0	24Hrs		N	N	Y	N	N	1		N	N	64K	0	0	Indianapolis Indiana
LOONEY BIN!	(619)390-9470	7,1,0	24Hrs		N	N	Y	N	N	1	N			562 KB	0	0	San Diego, California
MCI MAIL -	(Telenet)	8,1,N	24Hrs			N	Y	Y	Y	0	Y	N	N		0	0	Wash,D.C.
NIGHT OWL	(312)459-5721	8,1,N	24Hrs		Y	N	Y	Y	N	1	Y	Y	Y	7 MB	150 KB	0	Chicago, Illinois
OMNI-NET	(718)837-2881	8,1,N	24Hrs		N		Y			1	Y	N	N		0	0	New York
OWEGO FREE ACADEMY	(607)754-3420	8,1,N	24Hrs		N	Y	Y	Y		0	Y	Y				0	Owego, New York
PLINK			24Hrs				Y	Y	Y	1	Y	N	N		0	0	
SERIAL PORT	(313)286-0145	8,1,0	24Hrs		N	N	Y	Y	Y	1	Y	Y		15 MB	70 KB		Ann Arbor, Michigan
SOURCE	(Telenet)	7,1,0	24Hrs			N	Y	Y	Y	0	Y	N	N		0	0	McLean, Virginia
STARTEXT	(817)877-1041	8,1,N	24Hrs			N	Y	Y	N	0	Y	Y	N				Ft.Worth, Texas
TIMEXCHANGE	(213)329-3922	8,1,0	24Hrs		Y	Y	Y	Y	N	1	N	Y	Y	25 MB	900 KB	20 MB	Los Angeles, California
TSU	(216)327-1099	7,1,1	24Hrs		N	N	Y	Y	N	5	Y	Y	Y	800 KB	100 KB	0	Cleveland, Ohio
VSYS	(201)527-0535	7,1,N	*		Y	N	Y	N	N	4	N	N	N		0	0	Elizabeth, New Jersey
ZEBRA SYSTEMS	(718)625-6220	8,1,N	24Hrs		N	N	Y		N	8	Y						Woodhaven New York

SOFTWARE REVIEW: by Tim Swenson**QL Pascal Development Kit**
by Metacomco

This is a big package that comes in a big package. From the moment you see the package, it looks like it's well worth the price you've paid for it.

The package contains two tapes, a ROM cartridge, a well written user's manual, and a plastic "book" that is so typical of QL packages. Tape A is the compiler, with tape B having the screen editor and linker on it.

The user's manual is a fully bound book. In it is information on how to use the system, the screen editor, and a detailed look into Pascal syntax. The manual is not written as a learning aid for new Pascal programmers, but as a reference for Pascal. The book also lists the extensions to regular Pascal that have been added to take advantage of the features of the QL.

The screen editor is great. It is easy to use. Most of the editing commands are a combination of the arrow keys and the shift, alt, and control keys. Block commands and the such are entered by a command line called up by the F3 key.

One feature that I like about the editor, is its ability to use the QLs' built in feature of multi-tasking. The editor can be EXECed more than once so that you can edit more than one file at a time.

The only problem that I have found with the system, is that the compiler is kind of slow. It takes a couple of minutes to load the compiler in. Then it takes a couple of minutes to compile the program. This is definitely not Turbo Pascal, but they never said it was.

Even with the speed problem, this system gives QL users access to a language that is used almost universally by most computers. I have been using it in my Data Structures class. Most of the Texts on data structures have the algorithms in Pascal.

It also gives the user a very fast program with out the need and problems of going to Assembly.

```

10 REM ** DEMONSTRATION OF **
   ** USING "OVER" **
   ** TO DO UNDERLINING **
20 REM
25 REM ***** EXAMPLE 1 *****
30 PRINT AT 1,0;"NAME";TAB 9;"
ADDRESS";TAB 20;"CITY & STATE"
40 PRINT AT 1,0;; OVER 1;"
   ";TAB 9;"   ";TAB 20;"
50 REM
55 REM ***** EXAMPLE 2 *****
60 PRINT AT 18,0;"THIS IS THE
TIMELINEZ NEWSLETTER"
70 PRINT AT 18,12; OVER 1;"
80 REM
90 REM **** T S U N A M I ****

```

A V A I L A B L E

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TOTALLY SAFE MACHINE CODE FOR THE ZX81 AND TS1000

Rather than starting by beating a dead horse, the answer will precede the explanation.

Here are two templates:

```

1 REM .....1.....2...
.....3.....4.....5...
.....6.....7.....8...
.....9.....A.....
2 REM .....1.....2...
.....3.....4.....5...
.....6.....7.....8...
.....9.....A.....B.....

```

Template #1 provides 112 bytes of machine code space. When more than 112 bytes are needed, template #2 is added. Template #2 provides 122 bytes of machine code space. When still more space is needed, template #2 is copied to line #3 etc., as many times as you like.

Program memory begins at 16509. The following chart shows the memory addresses where the templates are stored. The addresses ***** are especially important. Your machine code can be POKEd into the text area of any template, with one (but important) restriction.

NOWHERE in your machine code can CHR\$(118)="ENTER" appear! The computer will interpret it as the end of the REM statement, with disastrous results.

FORMAT	1 REM	2 REM	3 REM	4 REM	5 REM	...
MSB LINE #	16509	16627	16755	16883	17011	...
LSB LINE #	16510	16628	16756	16884	17012	...
LSB LENGTH-4	16511	16629	16757	16885	17013	...
MSB LENGTH-4	16512	16630	*****	16886	*****	...
CHR\$(234)="REM"	16513	16631	16759	16887	17015	...
START OF TEXT	16514	16632	16760	16888	17016	...
END OF TEXT	16625	16753	16881	17009	17137	...
CHR\$(118)="ENTER"	16626	16754	16882	17010	17138	...
TEXT BYTES	112	122	122	122	122	

Avoiding CHR\$(118) in your machine code is always possible, but there are sneaky ways it can get there without you being aware of it. Either byte of a two byte CALL or JP address might accidentally be CHR\$(118). The first sneaky addresses in RAM are 16502, 16758, 17014, 17270, etc. by increments of 256 bytes.

Ah hah! The templates hide these under *****, so you do not have to worry about them. Don't stop worrying yet, though.

There are two more cases which require caution.

The first is another sneaky one, but simple to avoid.

Never use JR __,+120 . Use JR __,+121 and add a NOP instead.

The other case is obvious, but harder to fix. LD __,118 and CP 118 cannot be used.

For LD __,118 , use LD __,117 : INC __ .
For CP 118 , use CPL : CP 37 : CPL

In brief, never use:

```

JR __,+120 ,
LD __,118 , or
CP 118 .

```

The result is perfectly safe machine code which can be edited, added to, and saved to tape. (All right, you experts; you can't use I/O device (N)=118 , and you better use (HL) when addressing ROM routines.)

HEY! It works! Forget that dead horse.

The wierd doodad at the end of the templates is simply three NOPs followed by JR +6 . It comes in handy when your code runs into the next template.

One last hint--keep a spare copy of both templates.

© 1985 William J. Pedersen

HELP HELP HELP HELP HELP HELP HELP HELP HELP HELP

Can any one help me. My system is a TIMEX 2068 with two printers attached, the TIMEX 2040 printer plus an EPSON RX 80 with a TASMAN interface. Here's the problem. With both printers attached and turned on (my word processor can print to both printers at the same time) the EPSON printer sometimes locks up. It remains locked up even after I turn off total system power and then turn it all back on again the next day. The only way I can get the EPSON to work again is to disconnect the interfaces from the computer and then plug them back in again, but when doing so I usually lose everything in memory. I would appreciate any suggestions on how to solve or eliminate this problem.

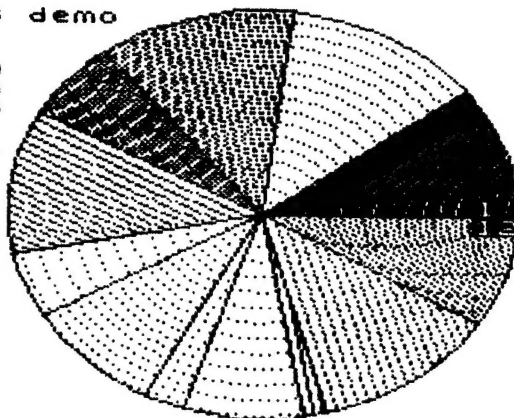
FRED TEMPLETON (415) 754-5575
520 NORTHBROOK CT.
ANTIOCH CA 94509

TIMEX 2068 demo

```

# 1 2 3 4 5 6 7 8 9 10 11 12
% 10 13 13 8 11 11 11 11 11 11 11 11
val 1 1 1 1 1 1 1 1 1 1 1 1

```



PIE CHART PROGRAM

BY FRED TEMPLETON (EBZUG)

This program will display a pie chart and the values for each of up to 18 pieces of the pie. If more than 18 pieces of the pie are entered then the %'s column will not line up with the values entered due to scrolling. The PLOTing routine is placed at the beginning of the program for speed. Depending on the pie slice densities, typical PLOTing time can run between 2 and 15 minutes.

```

1 RUN 400: REM FOR PIE CHART WITH UP TO 18 PIECES OF PIE
240 FOR r=1 TO ra STEP RND *6+.7: FOR p=as TO ae STEP d*(40/r): PLOT r+ COS p*xc,r+ SIN p*yc: NEXT p: NEXT r: RETURN
400 INPUT "PIE CHART NAME? ";Ns: CLS: PRINT Ns: val "Z": INPUT "How many divisions? ";div
401 LET total=0: DIM d(div)
402 FOR a=1 TO div: INPUT "enter value for division #";(a); " ";d(a): LET total=total+d(a): PRINT a; TAB 3;d(a): NEXT a
1100 LET xc=160: LET yc=80: LET ra=87: CIRCLE xc,yc,ra
1200 LET ang=0: FOR s=1 TO div
1400 PRINT AT s+2,8; INT (d(s)/total*100+.5)
2050 LET d=(RND *6+.7)*.01745
2200 LET as=ang+.01745
2210 PLOT xc,yc: DRAW ra+ COS as,ra+ SIN as
2220 LET ang=ang+d(s)/total*360
2300 LET ae=ang+.01745
2400 GO SUB 240
2440 NEXT s
3000 PRINT TAB 2;total; AT 10,30; INVERSE 1; AT 11,30;div
3333 STOP
9999 SAVE "pie chart"

```

SOFTWARE REVIEW: by Joan Kealy

Software Review of "Musician Royal" by Oleg Jefimenko, available from Electret Scientific Co., P.O. Box 4132, Star City, WV 25505. \$29 for full cassette program and 74 p. manual including complete index. Demo available for \$3 to be applied to full purchase price if full program subsequently ordered.

This program is available for TS2063 and IBM PC. Interestingly, this program was written first for the TS2068, enabling Dr. Jefimenko to write his book, *22 Music Programs for the Timex Sinclair 2068*, a best-seller per E. Arthur Brown Co. A few short months ago he published his "Musician Royal" so others could transcribe their own choice of selections into one of 3 forms—a "Music Box Collection", a "Music Album", or a SAVE for independent playing. To me among the most useful features is the ability to change the music's pitch or tempo to an arrangement more personally pleasing. The manual is an additional asset because, in the process of learning transcription, one will naturally learn a great deal about music notation. But you need know NONE to transcribe songs from sheet music to computer, because the program will, for instance, determine the correct key when number of sharps or flats are input. There are correction opportunities aplenty including a printout to TS2040 for easy-find on errors.

The author has explained why he chose to use BEEP rather than SOUND channels—due to the limited memory of TS 2068, the effective note capacity of the program would be smaller (only about 400 melody notes), so that only very short compositions could be transcribed with it. In fact, my favorite tune on the Demo, "Tico Tico", could not have been transcribed because it has 934 notes. As written, "Musician Royal" can hold all the repeats necessary for "da capo al fine" so the music can be played exactly as written—not just sketches of melody. There's room for changes of tempo and key within the composition.

If the present program does well, Jefimenko plans to release a supplement to present manual and a second cassette with a four-channel version. If you pine for one-voice melody and three voice harmony, you'll have to settle for a max of 400 melody notes. I wish there was a TS 2068 disk version! IBM program comes on disk. I had zero luck trying to transfer the program to my Timex Portugal disk system but perhaps the author will help. He is an obliging correspondent who has answered other questions.

Though working through the manual is not difficult because of careful explanations, for me dealing with musical notation is sufficiently difficult for others that I am glad I am not trying to cope with four channels immediately! However, I went back to *22 Music Programs for Timex Sinclair 2068* and worked on the third "Music Box" with "Prelude" by Chopin in 4 channels. I must say, it's a difficult snafu: 400 notes in four voices or 1500 in one channel. The harmony was so much prettier than a single voice that I'd like the 4 channel sequel for those short pieces that would fit into 400-note slot. Add a small amplifier and a 4-part arrangement—TS 2068 becomes a musical instrument.

Frankly, I hope sale of "Musician Royal" justifies the supplement because I think entering all those DATA statements by hand for 4 channel versions is tedious as waxing a ballroom with one honeysuckle.

Bill Harbour
980 East Victory Dr.
Mobile, AL 36686

November 5, 1986.

Bill Miller
6675 Clifford Drive
Cupertino, CA 95014-4530

Dear Bill:

Would you please spread the word that I want to sell my 2068. I want \$278.00 final. The system includes the following hardware: A&J Micro Drive plus the printer cable, 2840 Thermal Printer, Pro/File Cartridge (that plugs into the expansion port), power supplies for both computer and thermal printer. The thermal printer is new. Timex replaced the old one I had after it malfunctioned. Also included is the following software:

1. Pro/File cassette.
 2. Teasword Two cassette.
 3. VU-30 cassette.
 4. VU-Calc cassette.
 5. Pixel Sketch & Graphics Editor version II.
 6. Grefist cassette.
 7. Flight Simulator.
 8. T/S Keyboard tutorial+turtle graphics+home accounting.
 9. Xadow Game
 10. Timegate Game.
 11. A&J Printer Driver Software on wafer tape.
- Also included is 5 blank cassettes, and 1-10", 1-82", 3-20", 4-35" wafers.

The following books are included;

1. 2-Pro/File manuals.
 2. 2068 Manual.
 3. The Essential Guide To Timex/Sinclair Computers.
 4. Timex Sinclair 2068 Intermediate/Advanced Guide.
 5. The Working Timex Sinclair 2068.
 6. Tantalizing Games For The Timex Sinclair 2068 Series.
 7. Various other catalogs and newsletters and such.
- I will send a letter that has been notarized to guarantee that the computer left here in working order.
*****The buyer must pay freight*****
I am buying a Commodore 128 and need the money.

Thanks a million for your help!

Bill Harbour
Bill Harbour

EBZUG NEWS

BY FRED TEMPLETON

REPORT ON MEETING OF NOVEMBER 20th.

Meeting was called to order shortly after 8:00PM by Joseph Randall. The meeting was started by everybody identifying themselves and there current interests and/or projects. Regular members in attendance were Ivor Alma, Russell English, John Ezike, Tom Fattaruso, Fred James, Alvin Lam, Woody McPheeters, Bill Miller, Joseph Randall, Wayne Seibel, Fred Templeton, Darwin Thompson, and Kevin Zimmerman. In addition Erwin Mead from GUTS visisted us, and we welcomed two new members MATT MOORE and DANIEL L. MOORE (not related)

Darwin Thompson informed us that the QL has been selling for as low as 199.00 at A+ Computer Response 69-B Island St. Keene, NH 03431 (603) 357-1800. He reported that they can help with almost any added option to configure a system to anyones needs. It is unknown if Sunset Electronics is matching the price. It seems the price decline is due to an upcoming change in the QL's distribution network.

Russell English brought to our attention that most parts for the 2068 are available at most electronics stores except the SCLD chip which is custom to the 2068. There is a souce and he reported that the group could join the other user groups to purchase some. A vote was taken to purchase one for our general inventory, which did not pass. It was suggested that those who are interested put up the cash and share the risk. Price 1-\$25.00 3 or more \$18.00.

One of the main events of the night's meeting was a video of the TIMEX/SINCLAIR Computer Fest in Cincinatti, Ohio this May '86. The video was as exciting as watching the opening of Al Capone's underground vault--empty. The entire 15 minute feature was a constant panning view of the people there without a single feature or interview. At least we did get to see some of the exhibitors displays. Although the video was limited it did show that there were plenty of people there.

I got a chance to show off my 2068 word-processor with multi-tasking abilities but I blew it when I POKED the wrong address into the vector table and caused the printer output to get scrambled and ultimately to crash the whole system. Fortunately I printed out the beginning of this article on the 2040 printer (while the EPSON printer was printing something else) before the crash.

PUG NEWS

BY GEORGE MOCKRIDGE

‡ JACK DOHANY HAS WRITTEN THE DEFINITIVE RLE PROGRAM FOR THE TS-2068. HIS MC VERSION NOT ONLY INSTANTLY DECODES PICTURE FILES...IT ALSO CREATES AN RLE FILE FROM A PICTURE THAT YOU SUPPLY.

‡ THOSE PEOPLE WITH AN AERCO DRIVE CAN NOW PURCHASE SOFTWARE ON 5.25" DISKS. CONTACT: CHIA-CHI CHAO, 73 SULLIVAN DRIVE, MORAGA, CALIFORNIA 94556.

‡ MORE THAN SINCLAIR COMPUTERS HAVE BEEN ON DISPLAY AT THE LAST COUPLE OF PUG MEETINGS. TERRY GREENLEE SHOWED OFF HIS NEW TOSHIBA PORTABLE AND MALCOLM McAFEE DEMONSTRATED HIS ANSTRAD CPM-WORD PROCESSING COMPUTER. COME TO A MEETING...YOU NEVER KNOW WHAT YOU'LL SEE.

SVSTUG NEWS

BY BILL MILLER

- 1 Upcoming Meetings at El Camino Hospital, Meeting Room A (in Basement), 2500 Grant Road, Mountain View, at 7:00 P.M.:
 - ‡ December 30, Tuesday
 - ‡ January 27, Tuesday
 - ‡ February ??, ???????, No meeting place scheduled yet, if we can't find a place, we will meet with PUG at Peninsula Hospital in Burlingame on the 3rd Sunday of the month?
- 2 New meeting places:
 - ‡ While we are scheduling a new meeting place, we have an opportunity to decide if some other night would be more convenient for some members. If you have preferences, contact Bill Miller.
- ‡ The Timex Sinclair Special Interest Group of The Computer Workshop meets every Saturday morning at 9:00 A.M. at Stanford University Jordan Hall (in the Quadrangle), Math Building (Number 380) in Room 380C (downstairs). For topic, check the PDSE (Public Domain Software Exchange) BBS in Sunnyvale at 408 735-7390, 300/1200, 8, M, 1, 24 HRS.
- 3 BBS News:
 - ‡ Mark Wahl reported at the B61126 GUTS/SV (SVSTUG?) meeting that he is writing a BBS for the TS1000 which will be able to use the A&J TS1000 Microdrive, User Friendly Research Real Time Clock Board, Hunter 8K Non-volital SRAM/ EPROM Board, & Byte Back 64K UM-64 DRAM Board.
 - ‡ The B61204 'The Guide to T/S Telecommunications' from Steve Ishii reports Richard Kelsch is running 'The Looney Bin!' BBS in San Diego (619 390-9470, 300, 7, 1, 0, 24 HRS) using A TS2068, An A&J Microdrive, & A 512K RAM Drive!
 - ‡ Local Commodore 128 BBS's have offered thier systems for TS Message Bases:
 - ‡ Steve Nichols, Cupertino BBS 408 253-2295, 300/1200, 8, M, 1, 24 HRS. Steve reports he has written several TS1000 programs which he would be glad to donate to the User Group. They are all for 16K and include: Mailing Label, Invoice, & Speeds & Ratios, + several others. For more information, leave a message on Steve's BBS.
 - ‡ Ron Pierce, Milpitas BBS 408 262-3963, ???, ?, ?, ?? HRS. B61206.1451;SL;142

IT NEVER RAINS BUT IT POURS! A LOT OF ARTICLES WERE RECEIVED FOR THIS ISSUE OF TIMELINEZ. THUS...THE 12 PAGES. KEEP UP THE GOOD WORK!!!

* * * * *

COMPUTER CALENDAR

* * * * *

J A N U A R Y 1 9 8 7

- 3 COMPUTER SWAP MEET 10am-5pm
San Mateo Fairgrounds \$5
- 18 PENINSULA USER GROUP 1:00
Peninsula User Group
1783 El Camino Real
Burlingame
- 22 EAST BAY USER GROUP 7:30
West Branch Library
1125 University Avenue
Berkeley
- 27 SILICON VALLEY USER GROUP 7:00
El Camino Hospital
Meeting Room A (in basement)
2500 Grant Road, Mountain View

F E B R U A R Y

- 15 PENINSULA USER GROUP 1:00
- 26 EAST BAY USER GROUP 7:30
- ?? SILICON VALLEY USER GROUP
(Date to be Determined)

* * * * *

COMPUTER HOTLINE
KSTS, Channel 48 Tuesdays, 6:00

THE COMPUTER SHOW
KTSF, Channel 26 Tuesdays, 7:00

COMPUTER CHRONICLES
KQEC, Channel 32 Tuesdays 7:30
KCSM, Channel 60 Fridays 9:00

* * * * *

E B Z U G EAST BAY Z80 USER GROUP
===== 3128 KING STREET
BERKELEY, CALIFORNIA 94703
(Woody McPheeter's)

CONTACT: RUSS ENGLISH, (415) 465-3116

MEETINGS: FOURTH THURSDAY OF EACH MONTH, 7:30 P.M.
WEST BRANCH LIBRARY
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P U G PENINSULA USER GROUP
===== 311 MICHELLE LANE
DALY CITY, CALIFORNIA 94015
(415) 878-1773

PRESIDENT: GEORGE MOCKRIDGE

MEETINGS: THIRD SUNDAY OF EACH MONTH, 1:00 P.M.
PENINSULA HOSPITAL
1783 EL CAMINO REAL, BURLINGAME

MAIL DUES TO "PAT MORRISSEY", 2000 CRYSTAL SPRINGS ROAD,
BLDG 21, APT 22, SAN BRUNO, CA 94066

S V S T U G SILICON VALLEY SINCLAIR TECHNOLOGY USER GROUP
===== 6675 CLIFFORD DRIVE
CUPERTINO, CALIFORNIA 95014
(408) 253-3175

PRESIDENT: RITA CARR, (408) 738-2888, X-4579

MEETINGS: LAST TUESDAY OF EACH MONTH, 7:00 P.M.
(FOR LOCATION OF MEETINGS, SEE ACCOMPANYING
CALENDAR AND SVSTUG NEWS.)

MAKE CHECK FOR DUES PAYABLE TO "SINCLINK".

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CHECK TO ONE OF THE ABOVE GROUPS.

→ by William J. Pedersen ←

There have been quite a few articles written recently on the CENTRONICS interface. While there is some difference in printer design, only one variation is of any significance. Some printer designs provide RESET as a separate connector pin. Others use the ASCII escape code.

The routine shown below applies to all printers operating with a Z80 PIO interface having the STB pin connected to one of the status port bits.

Bank#255 Group:WIDJUP Routine:PIO #2

```

61594 08      EX AF,AF'
61595 DB80    IN A,(N)
61597 E610    AND N
61599 200C    JR NZ,+14
61601 08      EX AF,AF'
61602 D302    OUT (N),A
61604 AF      XOR A
61605 F3      DI
61606 D300    OUT (N),A
61608 2F      CPL
61609 D300    OUT (N),A
61611 FB      EI
61612 C9      RET
61613 CD0920   CALL NN
61616 3BE9    JR C,-21
61618 CF      RST B
61619 0C      DC
128      !Save character
16      !Get Status
16      !Mask BUSY bit
61613   !If BUSY
        !Here if NOT BUSY\Get A
        !Send char
        !Zero REG A
        !Block keyboard interrupt
        !Drive STB low.
        !Set REG A to 255
        !Restore STB high.
        !Restore interrupts
        !Get next char
        !BREAK?
6201    !LOOP until NOT BUSY
61595    !Error exit
        !BREAK error message.
    
```

NOTE #1: If printer is not turned on, data is lost.
 NOTE #2: Printer will lock up if STB is active when ACK rtnrd
 NOTE #3: Port addresses should be for your interface
 NOTE #4: Status bit assignments should be for your interface

This routine will never cause a printer to lock up. The time taken by the 2055 to process a keyboard interrupt is often more than 150 microseconds. If this interrupt was permitted while STB was low, the ACK signal could arrive from the printer before STB went high again.

In this routine, interrupts are blocked while the STB pulse is being sent.

For those not familiar with STB and ACK, the STB is a signal to the printer that valid data is present on the data wires. The ACK is an acknowledgement signal from the printer that the data has been received, and other things are normal.

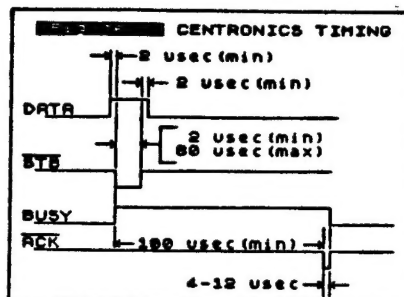
Both signals are pulses having the timing shown in Figure 1.

The ACK pulse can be as short as 4 microseconds. A 2055 code loop to test if it is there takes longer than that. Part of the time the signal will be missed. That is why the BUSY signal is tested instead. The reason for the ACK signal is to generate an interrupt when that operating mode is in use. The Z80 PIO can be configured that way but the 2055 does not operate in IM2 as a general rule. (Vectored interrupt mode)

When things are not normal, like running out of paper, or the printer cover is open, the program keeps looping. In order to break out of this loop, use is made of the ROM subroutine BREAK? at address 8201. Usually, this is sufficient because printers indicate when they are at FAULT with an alarm and/or light. If not, you might want to test the printer status after calling the BREAK? routine. This is like gilding a lily, though.

BREAK? is a short routine which senses if both the CAPS SHIFT and BREAK keys are pressed. It does not wait for the keyboard interrupt.

Not even one character is lost when breaking in. CONT takes up where it left off. This lets you take care of the printer if necessary, or to enter immediate instructions.



A printer needs two routines to bring it on line. The first is to configure the Z80 PIO interface so it will properly talk to the printer. The second is the equivalent of OPEN #3,"C".

There are six items of information you must provide. You can arrange for these to be default values if you want. For this article they are variables C1 through C6. The parameters they represent are:

C1 = TO PRINTER PORT ADDRESS
 C2 = ABOVE COMMAND REGISTER ADDRESS
 C3 = STATUS/STB PORT ADDRESS
 C4 = ABOVE COMMAND REGISTER ADDRESS
 C5 = BUSY BIT VALUE
 C6 = STB BIT VALUE

The following statements accomplish the initialization.

```

599 RESTORE 600
600 DATA 8,219,C3,230,C5,32,12,
8,211,C1,175,243,211,C3,47,211,C
3,251,201,205,9,32,56,-23,207,12
601 FOR N=61594 TO 61619
602 READ PARM:POKE N,PARM
603 NEXT N
604 OUT C2,255:OUT C2,255:OUT C
2,7
605 OUT C4,255:OUT C4,255:C6:OU
7 C4,7
    
```

The equivalent of OPEN #3,"C" is:

```

510 POKE 26703,154:POKE 26704,2
40:RETURN
    
```

The equivalent of CLOSE #3 is:
 (CLOSE #3 works too.)

```

620 POKE 26703,PEEK 26693:POKE
26704,PEEK 26694:RETURN
    
```

The CLOSE #3 returns control to the 2048 printer.

The OPEN #3,"C" enables LPRINT to the printer, but if you want COPY and LIST to work, a lot more machine code is needed. This is because both use tokens and control codes the printer cannot understand.

If your printer is one of those with a wired RESET, you must reconfigure the PIO to address that bit, then restore the working configuration after the reset is completed.

One other problem can be encountered. Printers with graphic capability will not respond to commands until they have been fed all graphic data. This is most easily solved by sending a long string of CHR\$0 (NOPs) before issuing commands. This will fill the graphic buffer and the extra NOPs will be ignored.

MANAGING EDITOR: Walt Gaby

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